Briefing Materials & Agenda

Older Adult Fall Prevention Symposium
Wednesday, June 24, 2009
9 a.m. to 4 p.m.
Rolling Hills Wildlife Conference Center
625 North Hedville Road, Salina, Kansas

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Symposium Objective and Information

At the Older Adult Fall Prevention Symposium we will examine fall-prevention interventions and **recommend three that are best-suited for implementation across Kansas.** A consultant will then write a report about the Symposium and our recommendations, which you can review and comment on before it becomes final. Ultimately, recommendations generated at the Symposium will become the central part of the Kansas Older Adult Fall Prevention Plan.

The Kansas Department of Health and Environment's Office of Health Promotion, organizer of the Symposium, wants our recommendations, and ultimately the Prevention Plan, to meet the following criteria:

- Employ evidence-based interventions
- Adhere to principles of effective prevention
- Be feasible for implementation by agencies and organizations across Kansas

Unlike with other planning meetings you may have attended, the Symposium's output will not be an agenda for another meeting. **We will actually produce something at the Symposium.**

Q&A about the Symposium

Why is this important?

Falls are the most common cause of injury in Kansas, and half the falls occur among people aged 65 and older. Falls frequently cause moderate to severe injury, requiring long hospital stays and subsequent admission to skilled nursing facilities, nursing homes, and rehabilitation facilities. Falls are costly for taxpayers because some are treated using Medicare funds, and they can be painful and even life-changing for the older adults who suffer them, as well as their families. **But falls are preventable.** You can help us select the prevention strategies best suited for implementation in Kansas.

Why do we need your help?

Three reasons. One, we want to use our existing, limited taxpayer funds wisely and efficiently. Two, we believe the best ideas come from diverse groups working and thinking together. Three, we need widespread stakeholder consensus. Because existing resources are limited, we need to seek external funding for fall prevention efforts. Granting agencies look for stakeholder buy-in when making funding decisions. **A similar effort on suicide prevention in Nebraska has already generated $35,000 in external grants.**

Why is this packet so long?

Because everything is here, in one place. We can all recall attending planning meetings with thick binders full of handouts from a variety of sources. By contrast, one person pulled together this entire packet, designing every section to communicate only what you need to know, in the order you need to know it.

One drawback: You don't get to take home another binder.

Do I have to read this entire thing before the Symposium?

Please do. This is the minimum you need to know to make an effective contribution at the Symposium and take a meaningful step toward preventing older adult falls in Kansas. When everyone starts from the same knowledge level, participants feel empowered to contribute and more gets done because everyone is equally equipped to help.

There will be no presentations of this information at the Symposium. That's good news, in that you don't have to sit through another boring PowerPoint slideshow. But to avoid the slideshow and get right to producing a prevention plan, you have to read these briefing materials. We think you'll agree it's a good tradeoff.

What will the Symposium be like?

Highly structured and fast moving. We will move step by step through a tight agenda. We respect your time and will take breaks, eat lunch, and finish our work, all on schedule.

Here is a very brief play-by-play:

1. Randomly assigned small groups will discuss the briefing materials and the Symposium objective; then write questions to ask a panel of experts.
2. An expert panel will answer the small groups' questions.
3. Small groups will formulate three recommended strategies each for preventing older adult falls in Kansas.
4. A facilitator will moderate a large-group discussion to clarify and narrow down the small groups' recommendation. The result of the discussion will be a number of options for inclusion in an online ballot.
5. The day after the Symposium, participants will rank-order their preferred options via the online ballot.

Will there be good food?

Definitely! The Rolling Hills Wildlife Conference Center is known for the quality of its catering. Our tentative menu is:

- **Throughout the day:** Coffee, iced tea and water
- **Snacks:** Salsa, guacamole, hummus, pita bread, chips, "and of course fruits and vegetables since we are the Office of Health Promotion."
- **Lunch:** Deli sandwich buffet, homemade potato soup, and a wild greens salad with feta cheese, candied walnuts, and sherry walnut vinaigrette. Yum!

For more details, see the agenda and the session descriptions that follow.

Why just three recommendations?

We want the Kansas Older Adult Fall Prevention Plan to be reader-friendly (that is, short) and to contain only the most promising fall-prevention interventions for Kansas.

What if I have more questions?

Please feel free to call or e-mail our consultant, John Fulwider. His mobile number is (402) 202-2820, and his e-mail address is john@fulwiderpartners.com.

Introduction to the Briefing Materials

How to use the briefing materials

This packet serves as both briefing materials to read **before** the Symposium, and a detailed agenda to work through **during** the Symposium. We won't hit you with much other paper during the Symposium; this is pretty much it.

Before the Symposium

1. Carefully read all the sections from here up to the agenda.
2. Examine the agenda so you know what to expect at the Symposium.
3. Skim the agenda session descriptions, and if you have time jot down some ideas in the spaces provided.

During the Symposium

Use this packet as a workbook, following along with the five session descriptions appearing after the agenda.

Rationale for each section

Here's why we would like you to read each section in the briefing materials:

Older Adult Falls in Kansas

These data describe why falls are a problem for older adults in Kansas. Read this to get a handle on the scope of the problem.

Older Adult Fall Risk Factors

To be effective, any prevention program has to address modifiable risk factors. Risk factors for falls must be understood before interventions can be designed.

Effective Fall Prevention

We have all seen firsthand how limited staff and financial resources are in the current economic climate. When we come up with resources to put toward fall prevention, we have to use them wisely. Following effective prevention principles is a key step in making that happen.

Fall Prevention Programs

We excerpted this information from a list of evidence-based fall-prevention interventions recommended by the Centers for Disease Control and Prevention. Using interventions already proven effective is smart because a) they work and b) more and more granting agencies and organizations are requiring a basis in evidence for programs they fund.

The Symposium's Consensus Conference Meeting Format

We're using a highly structured, facilitated meeting process to get a lot done in a very short time. We'd like you to understand ahead of time why we're doing things this way.

Older Adult Falls in Kansas

Public health data

Fall injuries are a significant public health problem in Kansas. Between 2003 and 2007, falls were the second-leading cause of unintentional injury deaths and the fourth-leading cause of death due to overall injuries. In this period about one in five (N=919; 19%) unintentional injury deaths were due to fall-related injuries.

Age-adjusted fall related injury deaths for all ages are higher among males compared to females (9 males vs. 5.6 females per 100,000 populations). However, females have higher rates of hospitalization due to fall injuries (28.5 females vs. 21.3 males per 100,000 population). This pattern holds for older Kansans as well. Among Kansans ages 85 and above, males have a higher fall-related death rate compared to females (180.9 males vs. 140.2 females per 100,000 population). In that same age group, females have higher rates of hospitalization due to fall injuries (485 females vs. 301.5 males per 100,000 population).

For both deaths and hospitalization, falls are highest among older adults ages 75 and above. Kansans ages 85 and above have the highest fall-related injury death rates (158.1 deaths per 100,000 population). The second-highest rate is among those ages 75 to 84 (51.6 deaths per 100,000). Similarly, these two groups have the highest and second-highest fall-related hospital discharge rates (429.8 and 181.5 per 100,000 population, respectively).

Among adult Kansans ages 85 years and above, males have a higher fall related death rate compared to females (180.9 vs. 140.2 per 100,000 population).

Source: Kansas Department of Health and Environment, Office of Health Promotion, Injury and Disability Prevention Programs.

Trauma data

Falls are the most common cause of trauma in Kansas. In 2006, 2,721 unintentional fall-related traumas (ICD-9 E-codes 880-888) were reported to the State Trauma Registry. Injury severity was minor (ISS 1-8) for approximately half (53%) of patients, moderate (ISS 9-14) for 31% of patients, and severe (ISS $\geq$ 15) for 16% of patients.

The average length of stay across all ages was 5.7 days. Twelve percent of patients stayed in the hospital one day, 58% stayed for 2-5 days, 23% stayed 6-10 days, and 7% stayed for more than 10 days.

Traumas due to falls result in a significant amount of morbidity. Discharge disposition for more than two-fifths of patients was either to a skilled nursing facility (24%), a nursing home (6%), or rehabilitation facility (11%). Half of patients who fell were discharged to home or to home with health care. Death was the outcome for 4.37% of patients.

Who is injured by falls?

Although a preponderance of falls occur in older individuals, falls occur in all age groups. On average, male fall patients are younger (average age 54 years) than females (average age 71 years). Half of all male patients are older than 57 years old, whereas half of female patients are older than 79 years old.

Where do fall traumas occur?

Many falls (63%) included in the trauma registry occur at home. Other places where falls occur include: residential facility (9%), public building (7%), recreation (4%), industry (3%), farm (1%), and other/unspecified place (11%). For adults more than 55 years old and children 0-4 years old, more than half of all falls occur at home. For people 85 and older, 21% of falls occur in residential facilities.

How do fall traumas occur?

A relatively large number of falls occur from slipping or tripping (30%), followed by falls from stairs (12%), ladders, scaffolding or buildings (10%), chairs/furniture (9%), and other heights (8%). The cause of over one-quarter (27%) of falls is unspecified. The number of fall traumas due to slipping increases dramatically with age. Similarly, the number of falls on steps increases with age. The number of sports-related injuries peaks at 5-14 years old and falls from ladders and buildings are highest in the 35-54 year age groups.

Source: Adapted from Kansas Trauma Program Spring 2009 "Impact" newsletter.

What about hip fractures?

The above data do not represent all hospitalized fall injuries in Kansas. One large group excluded from the trauma registry is patients who sustain isolated hip fractures from falling from the same level (slipping, tripping or unspecified fall). Here are *national* data from the Centers for Disease Control and Prevention on the frequency and cost of hip fractures.

How big is the problem?

- In 2004, there were more than 320,000 hospital admissions for hip fractures, a 3% increase from the previous year. However, from 1996 to 2004, after adjusting for the increasing age of the U.S. population, the hip fracture rate decreased 25% (from 1,060 per 100,000 population to 850 per 100,000 population).
- Over 90% of hip fractures are caused by falling, most often by falling sideways onto the hip.

What outcomes are linked to hip fractures?

- About one out of five hip fracture patients dies within a year of their injury.
- Most patients with hip fractures are hospitalized for about one week.
- Up to one in four adults who lived independently before their hip fracture has to stay in a nursing home for at least a year after their injury.

Who is at risk?

- About 76% of all hip fractures occur in women.
- Hip fracture rates increase exponentially with age among men and women. People 85 and older are 10 to 15 times more likely to sustain hip fractures than are people ages 60 to 65.
- Osteoporosis increases a person's likelihood of sustaining a hip fracture.

Source: Excerpted from National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention, "Hip Fractures Among Older Adults."

Older Adult Fall Risk Factors

Falls are not an inevitable consequence of aging, but falls do occur more often among older adults because fall risk factors increase with age and are usually associated with health and aging conditions. These risk factors include:

Biological risk factors

- Mobility problems due to muscle weakness or balance problems
- Chronic health conditions such as arthritis and stroke
- Vision changes and vision loss
- Loss of sensation in feet

Behavioral risk factors

- Inactivity
- Medication side effects and/or interactions
- Alcohol use

Environmental risk factors

- Home and environmental hazards (clutter, poor lighting, etc.)
- Incorrect size, type, or use of assistive devices (walkers, canes, crutches, etc.)
- Poorly designed public spaces

Usually two or more risk factors interact to cause a fall (such as poor balance and low vision, which can cause a trip and fall going up a single step). Home or environmental risk factors play a role in about half of all falls.

Understanding these risk factors is the first step to reducing older adult falls. Over the past two decades, researchers around the world have used descriptive studies to identify risk factors and randomized controlled trials to test fall interventions. The results of these studies show that reducing fall risk factors significantly reduces falls among community-dwelling older adults.

Risk Factor

An attribute, situation, condition or environmental context that increases the likelihood of a fall. Risk factors must be easily modifiable. For instance, a person's physical fitness is easily modifiable; a person's gender is not.

Many older adults, as well as their family members and caregivers, are unaware of factors or behaviors that put them at risk of falling, and are also unaware of what actions they can take to reduce their risk. Fall risk factor assessment is rarely a part of an older adult's routine health care, even if they have had a fall or fall injury. All older adults should be encouraged to seek an individual fall risk assessment from their healthcare provider, especially older adults with a history of falls and/or with mobility or balance impairments who are at highest risk for falls.

Source: Adapted from Centers for Disease Control and Prevention, "Preventing Falls: How to Develop Community-based Fall Prevention Programs for Older Adults," pp. 2-3.

Effective Fall Prevention

We would like you to consider two resources on effective fall prevention. First, we present the Centers for Disease Control and Prevention's "The 5 Building Blocks of Effective Community-based Fall Prevention Programs."

Second, we present nine principles of effective prevention programs. These principles were uncovered in a study not of fall prevention, but of preventing substance abuse, risky sexual behavior, school failure, and juvenile delinquency and violence. Still, we think all of them (with appropriate adaptation of Principle 5, "Positive Relationships," and Principle 6, "Appropriately Timed") are worth considering in any prevention effort, including fall prevention.

The 5 Building Blocks

The five main building blocks of an effective community-based fall prevention program are:

- Education about falls and fall risk factors.
- Exercises that improve mobility, strength, and balance, and that are taught by trained, nationally certified exercise instructors or physical therapists. Exercise programs include: Tai Chi individualized exercise sessions, group exercise classes, and home exercise programs with supervision until the older adult can exercise independently.
- Medication review to identify side effects or drug interactions that may contribute to falls. The reviews should be conducted by pharmacists or healthcare providers. Medication management—adjustments to or changes in medications—should be provided by physicians.
- Vision exams by trained healthcare professionals with vision correction by an optometrist or ophthalmologist.
- Home safety assessment and home modification by occupational therapists or other healthcare professionals with specialized training, to identify and modify home hazards that can increase older adults' risk of falling.

Building Block 1: Education programs for older adults and their caregivers

When developing a fall prevention program, it is important to include an educational component. While education alone has not proven to effectively reduce falls among older adults, it is typically combined with one of the other building blocks. Education for older adults and their caregivers can be delivered to individuals or to groups. Individual education sessions may work better for people who are hearing or vision impaired or have special needs. Sessions should be tailored to the attention span and cognitive ability of older adults. Visual aids such as brochures, fact sheets, and checklists will help facilitate the education session.

Group sessions provide the benefits of social interactions. Informal group discussions that include sharing personal experiences may reduce anxiety and increase motivation to adopt

new behaviors. Group teaching saves time and helps spread the information more quickly to more people.

Tips for developing an effective education component:

- Education should be delivered by trained professionals.
- Education should include problem solving and goal setting on the part of the learner.
- The length of the education session should depend on the individual characteristics of the older adult, such as concentration, hearing or visual impairment, etc.
- Group vs. individual education may be determined based on which other building block is being offered in combination.
- Visual aids are valuable tools in increasing comprehension.
- Materials should be designed with a high contrast background and large lettering.
- Materials should reflect literacy levels and be culturally appropriate.
- Presentations and materials should not contain abbreviations and jargon.
- Education is most effective when offered on an ongoing basis.

Building Block 2: Progressive exercise programs to improve mobility, strength, and balance

Among older adults, strength and balance exercises, such as Tai Chi, can reduce falls by improving mobility, strength, and balance. These programs focus on exercises that are specifically designed or adapted for older adults.

Tips for developing an effective exercise component: To be safe and effective, older adult exercise programs (one-on-one or group classes) must be taught by one or more of the following professionals:

- Nationally certified fitness/exercise instructors with specialized training in working with older adults. Because exercise instructors are not licensed, having a national certification or accreditation is the minimum qualification requirement for teaching fall prevention exercise programs to older adults.
- Exercise science/physiology professionals with a bachelor's degree or master's degree in this field.
- Physical therapists.
- Occupational therapists.
- Recreational therapists with a bachelor's or master's degree.
- Tai Chi instructors, masters or grand masters, who have completed a Tai Chi course taught by a Tai Chi master or grand master, have a national certification in older adult physical activity, and have experience in teaching exercise to older adults.
- Physical, occupational, and recreational therapy assistants who are under the direct supervision of a physical, occupational, or recreational therapist.
- All professionals who teach exercise to older adults must have a current CPR/AED certification.
- To be effective in reducing falls, exercises must be performed at least twice weekly on an ongoing basis and progress in difficulty throughout the program.
- Ideally, the exercise classes should be offered on an ongoing basis for long-term attendance. Short-term programs that have a set number of sessions should provide written instructions so

participants can continue to do the exercises at home.

- Participants should be taught the exercises under the direct supervision of a trained exercise instructor or physical or occupational therapist, either in one-on-one home sessions or in group sessions, before performing them independently at home.
- Evaluate how the program instructor delivers the exercise program. Use process evaluation methods to ensure that the exercises are being taught properly and consistently. Also, obtain feedback from the program participants.
- Base program content on current published materials specifically developed for older adults by exercise science, physical therapy, or Tai Chi professionals.
- Assess older adults' strength, balance, and fitness at the beginning and end of each new exercise program.
- Limit the number of participants in group classes to no more than 15 to allow the instructor the ability to closely observe and supervise participants during the class session.

Building Block 3: Medication review and management

The purpose of medication review and management is to identify and eliminate medication side effects and interactions, such as dizziness or drowsiness, that can increase the risk of falls.

Many older adults are unaware that their daily medications may increase their fall risk. Aging affects the absorption, distribution, metabolism, and elimination of medications. Age can also increase sensitivity to potential side effects. Older adults may get prescriptions from multiple doctors. Fall risk increases with the total number of prescription and over-the-counter medications.

Psychoactive medications (drugs that alter brain function) increase fall risk. These include antidepressants, tranquilizers, antipsychotics, anti-anxiety drugs, and sleep medications. Other medications that may cause problems include those prescribed to treat seizure disorders, blood pressure-lowering medications, cholesterol-lowering medications, heart medications, and painkillers.

Drug side effects that can contribute to falling include blurred vision, hypotension leading to dizziness and lightheadedness, sedation, decreased alertness, confusion and impaired judgment, delirium, compromised neuromuscular function, and anxiety. Review and modification of the medication regimen by a healthcare provider can frequently reverse or minimize these effects.

Clinical practice recommendations include medication reviews by healthcare providers for older adults who have fallen.

Tips for developing an effective medication review and management component

- Medication reviews are recommended for older people taking four or more medications and those taking any psychoactive medications.
- Medication reviews can be done in screening clinics, hospital programs, home visits by home health professionals, pharmacies, and doctors' offices.
- Medication reviews can be done by a pharmacist or a healthcare provider. Coordinated medication management that involves changing or reducing types or dosages of medications should be done by the older adult's healthcare provider.
- Medication review and management may include assessing the need for

vitamin D and calcium supplements as well as osteoporosis treatment.
- The amount and frequency of alcohol use should be included in a medication review.

Building Block 4: Vision exams and vision improvement

Vision changes and vision loss associated with aging are common fall risk factors among older adults. Vision loss can contribute to falls by disturbing balance and by obscuring tripping and slipping hazards.

Many vision conditions, such as cataracts, glaucoma, and macular degeneration, are gradual and painless. However, if these conditions are diagnosed early, they can be managed to minimize vision loss.

Older adults may have difficulty learning about and/or accessing community programs that offer vision care services. Community-based organizations can play an important role by providing information about and encouraging regular vision exams and care, and by referring older adults to community vision care services and resources.

Tips for developing an effective vision component

- Limited basic or simple vision screening can be performed by trained healthcare professionals such as physicians, nurse practitioners, physicians' assistants, registered nurses, and occupational therapists. However, basic vision screening does not identify all types of vision problems that need to be corrected.
- Comprehensive vision exams must be performed using specialized equipment. Therefore, these must be done by an optometrist or ophthalmologist.
- Medicare provides coverage for dilated eye exams, which are considered comprehensive vision exams.

Building Block 5: Home safety assessment and home modification

Environmental factors play a part in approximately half of all falls that occur at home. Falls can be caused by slipping and tripping hazards, poor lighting, or the lack of needed home modifications such as bathroom grab bars, handicapped showers, stair railings, and ramps.

A home safety assessment can identify factors that may put an individual at risk for falling. Many older adults can benefit from home safety assessments, but those with a history of falls and/or with mobility or balance difficulties have the greatest need for such an assessment. Home assessments can be combined with or included with other direct one-on-one services that are provided by community service programs to residents in their homes.

A self-administered home safety assessment checklist can be helpful if there is a plan for follow-up review with a trained professional and if information and referrals to home modification programs and resources are provided.

Older adults may have difficulty learning about and/or accessing home safety and home modification information and resources. Local Area Agencies on Aging (AAA) can provide information and referrals to local home modification programs. AAA can also provide information about state and federal programs that offer services and financial assistance to low-income seniors.

For an older adult who has been injured in a fall, Medicare may cover a home safety assessment and home modification if it is performed by an occupational or physical therapist. The senior must meet the home

health reimbursement criteria, and these home services must be prescribed by a doctor, nurse practitioner, or physician assistant.

Occupational therapists can conduct environmental assessments, assess how the older adult interacts with their home environment, and suggest adaptations or modifications that can help older adults with limited physical function or low vision prevent falls and live independently.

Tips for developing an effective home safety component

- Home safety assessments and modifications are most effective when they are done in the home by an occupational therapist and when they include education, recommendations, and a follow-up home visit to assess the need for additional modifications.
- Home assessments and modifications by an occupational therapist are especially effective in reducing falls among older adults who have already had a fall.
- Occupational therapists are specifically trained to help individuals adapt their living environments to their physical needs, so they can perform their daily activities as independently and safely as possible. Occupational therapists are also trained to provide education to older adults, their family members, and caregivers.
- Trained professionals such as a Certified Aging in Place Specialist (certified by the National Association of Home Builders), registered nurses, and physical therapists can also effectively carry out home assessments and modifications, in collaboration with occupational therapists.
- In addition to home modifications, some older adults may need to use personal assistive safety and mobility devices. An occupational or physical therapist can provide the training needed to use these devices properly.

Source: Centers for Disease Control and Prevention. "Preventing Falls: How to Develop Community-based Fall Prevention Programs for Older Adults."

Feeling ambitious? You can read the whole thing at http://www.cdc.gov/HomeandRecreationalSafety/Falls/preventfalls.html

9 Principles of Effective Prevention Programs

1. **Comprehensive:** Strategies should include multiple components and affect multiple settings to address a wide range of risk and protective factors of the target problem.
2. **Varied Teaching Methods:** Strategies should include multiple teaching methods, including some type of active, skills-based component.
3. **Sufficient Dosage:** Participants need to be exposed to enough of the activity for it to have an effect.
4. **Theory Driven:** Preventive strategies should have a scientific justification or logical rationale.
5. **Positive Relationships:** Programs should foster strong, stable, positive relationships between children and adults.
6. **Appropriately Timed:** Program activities should happen at a time (developmentally) that can have maximal impact in a participant's life.
7. **Socio-Culturally Relevant:** Programs should be tailored to fit within cultural beliefs and practices of specific groups as well as local community norms.

8. **Outcome Evaluation:** A systematic outcome evaluation is necessary to determine whether a program or strategy worked.
9. **Well-Trained Staff:** Programs need to be implemented by staff members who are sensitive, competent, and have received sufficient training, support, and supervision.

Source: Nation, M., Crusto, C., Wandersman, A., Kumpfer, K. L., Seybolt, D., Morrissey-Kane, E., & Davino, K. (2003). What works in prevention: Principles of Effective Prevention Programs. *American Psychologist,* 58, 449-456.

Fall Prevention Programs

Falls are not an inevitable result of aging. In recent years, systematic reviews of fall intervention studies have established that prevention interventions can reduce falls.

Below are 14 fall-prevention interventions the Centers for Disease Control and Prevention compiled in a special report. The interventions come in three types: exercise-based, home modification, and multifaceted.

These interventions were selected because they:

- Included community-dwelling adults aged 65 and older (that is, adults not living in nursing homes)
- Used a randomized controlled study design
- Measured falls as a primary outcome (did not include intervention studies using other outcomes, such as balance improvement or reduced fear of falling)
- Demonstrated statistically significant positive results in reducing older adult falls

On the day of the Symposium, we will ask you to deliberate in your small groups about which fall-prevention strategies should be included in the Kansas Older Adult Fall Prevention Plan. It will be important that your small group consider the **compatibility** of potential strategies with local Kansas **contexts,** especially the context of small communities which may have limited **capacity** for implementation. Your group will need to consider whether **adaptation** of these strategies is necessary and desirable, while keeping in mind that **evidence-based strategies** are ideally implemented with **fidelity** to the original design.

Adaptation

Modifying strategies deliberately or accidentally in one of four ways: (1) deleting or adding to strategy core components; (2) modifying components included in the strategy; (3) changing the manner or intensity of administration of strategy core components called for in the manual, curriculum, or core components analysis; and (4) making modifications to suit local circumstances.

Exercise-based interventions

Stay Safe, Stay Active

Intervention: Weekly structured group sessions of moderate-intensity exercise, held in community settings, with additional exercises performed at home.

Outcome: Participants were 40 percent less likely to fall and one-third less likely to suffer a fall-related injury compared with those who did not receive the intervention.

Focus: Improve balance and coordination, muscle strength, reaction time and aerobic capacity.

Content: The classes were designed by a physical therapist to address physical fall risk factors:

Capacity

Characteristics of people, organizations, or prevention systems that affect their ability to implement prevention strategies. Obvious capacity factors are financial and staff resources.

- balance and coordination
- strength
- reaction time
- aerobic capacity

The classes included the following types of exercises:

- balance and coordination exercises, including modified Tai Chi exercises
- strengthening exercises
- aerobic exercises

Key Elements: This study used health practitioners to assess and recruit participants. The program used existing services and facilities in the community, so it is likely to be sustainable and transferable to other settings.

The Otago Exercise Program

Intervention: An individually tailored program of muscle-strengthening and balance-retraining exercises of increasing difficulty, combined with a walking program.

Outcome: Overall the fall rate was reduced by 35 percent among program participants compared with those who did not take part. Participants age 80 years and older who had fallen in the previous year showed the greatest benefit.

Focus: Improve strength and balance with a simple, easy-to-implement, and affordable home-based exercise program.

Content: A physical therapist (PT) or nurse visited each participant four times at home over the first 2 months and again for a booster session at 6 months. To maintain motivation, participants were telephoned once a month during the months when no visits were scheduled. During the visits, the PT or nurse prescribed a set of in-home exercises (selected at appropriate and increasing levels of difficulty) and a walking plan. The exercises included: Strengthening exercises for lower leg muscle groups using ankle cuff weights; balance and stability exercises; and active range of motion exercises. Participant safety was ensured by tailoring the exercise program and by giving participants instructions and an illustration for each exercise.

Key Elements: PTs should understand the research evidence on which the program is based and avoid adding or subtracting exercises from the set used in the trials, as this particular combination of exercises worked to reduce falls.

Tai Chi: Moving for Better Balance

Intervention: A 6-month program of Tai Chi classes, compared with a program of stretching exercises.

Outcome: Participants in the Tai Chi classes had fewer falls and fewer fall injuries, and their risk of falling was decreased 55 percent.

Focus: Improve balance and physical performance with Tai Chi classes designed for older adults.

Content: The program included 24 Tai Chi forms that emphasized weight shifting, postural alignment, and coordinated movements. Synchronized breathing aligned with Tai Chi movements was integrated into the movement routine. Each session included instructions in

new movements as well as review of movements from previous sessions. Practicing at home was encouraged and monitored using a home-practice log.

Key Elements: Program settings can include facilities such as senior centers, adult activity centers and community centers.

Australian Group Exercise Program

Intervention: A 12-month group exercise program for frail older adults. The program was tailored to each participant's abilities.

Outcome: Overall, the fall rate was 22 percent lower among people who took part in the program, and 31 percent lower among participants who had fallen in the previous year, compared with those who were not in the program.

Focus: Increase participants' strength, coordination, balance and gait, and increase their ability to carry out activities of daily living such as rising from a chair and climbing stairs.

Content: The group classes included weight-bearing exercises and balance activities that were challenging but not so difficult as to discourage participation or cause any adverse events. The program emphasized social interaction and enjoyment.

The program consisted of four 3-month terms. The first term included understanding movement, how the body works, training principles, and basic exercise principles. This was followed by progressive strength training and increasingly challenging balance exercises, using equipment to maintain interest. In each term, the exercise sessions built on the skills acquired in the previous term.

Key Elements: Instructors should have taken an exercise instructor course as well as a specific course on teaching exercise to older adults.

Compatibility

The degree to which a prevention strategy is suited to the state and community context, based on assessment by people familiar with the local context.

Veterans Affairs Group Exercise Program

Intervention: A structured group exercise program for fall-prone older men.

Outcome: During the 3-month program, participants were two-thirds less likely to fall compared with those who did not take part in the program.

Focus: Increase strength and endurance and improve mobility and balance using a low- to moderate-intensity group exercise program.

Content: The program included:

- Strength training, during which participants increased the numbers of repetitions and the resistance levels progressively over the course of the program.
- Endurance training using bicycles, treadmills, and indoor walking sessions.
- Balance training sessions, which were held twice a week and increased in difficulty over the 12-week program.

Key Elements: The program's key features were:

- Using a group format and providing a wide variety of exercise activities
- Focusing on strength, balance, and endurance
- Providing personal encouragement and reinforcement

Context

The larger environment in which a strategy is immersed and implemented. There are two types of context: setting and population. Setting context includes institutional and organizational characteristics, such as available resources; location; and the political environment. Population context includes people's sociodemographic characteristics, such as race, age, gender, and income.

Simplified Tai Chi

Intervention: A 15-week program of Tai Chi classes that used 10 simplified movements, compared with a balance training program.

Outcome: After four months, the risk of falling more than once among participants in the Tai Chi classes was almost half that of people in the comparison group.

Focus: Improve strength, balance, walking speed, and other functional measures among seniors using Tai Chi.

Content: Participants were taught a simplified version of Tai Chi. The 108 existing Tai Chi forms were synthesized into a series of 10 composite forms that could be completed during the 15-week period. The composite forms emphasized all elements of movement that generally become limited with age. Exercises systematically progressed in difficulty.

Key Elements: The program needs to be led by a very experienced Tai Chi grand master. No elements should be changed in order to replicate these results among seniors who are similar to study participants.

Home modification interventions

Home Visits by an Occupational Therapist

Intervention: An occupational therapist (OT) visited participants in their homes, identified environmental hazards and unsafe behaviors, and recommended home modifications and behavior changes.

Outcome: Fall rates were reduced by one-third but only among men and women who had experienced one or more falls in the year before the study.

Focus: Assess and reduce home hazards.

Content: The OT visited each participant's home and conducted an assessment using a standardized tool; environmental hazards were identified. The therapist also assessed each participant's abilities and behaviors and how each functioned in his or her home environment. Specific unsafe behaviors were identified; the OT discussed with the participants ways to avoid these unsafe behaviors.

Key Elements: Using an experienced occupational therapist is critical. The researchers in this study emphasized that this study should not be used to justify widespread, untargeted home modification programs implemented by people who do not have skills in caring for older people.

Falls-HIT Program

Intervention: The Falls-HIT (Home Intervention Team) Program provided home visits to identify environmental hazards that can increase the risk of falling, provided advice about possible changes, offered assistance with home modifications, and provided training in using safety devices and mobility aids.

Outcome: The fall rate for participants was reduced 31 percent. The intervention was most effective among those who had experienced two or more falls in the previous year: the fall

rate for these participants was reduced 37 percent.

Focus: Assess and reduce fall hazards in participants' homes.

Content: The first home visit was conducted while the participant was still hospitalized. An occupational therapist and either a nurse or physical therapist conducted a home assessment and identified home hazards and determined what safety equipment a participant needed. During two to three subsequent home visits, an occupational therapist or nurse met with the participant to discuss home hazards and recommend and facilitate home modifications.

Key Elements: Participants met with intervention team members at the hospital before they were discharged, which facilitated follow-up.

Multifaceted interventions

PROFET

Intervention: Prevention of Falls in the Elderly Trial (PROFET) provided medical assessments for fall risk factors with referrals to relevant services and an occupational therapy home hazard assessment with recommendations for home modifications.

Outcome: After 12 months, those in the intervention group were 60 percent less likely to fall once and 67 percent less likely to fall repeatedly, compared with those who did not receive the intervention.

Focus: Identify medical risk factors and home hazards, and provide referrals and/or recommendations to reduce fall risk and improve home safety.

Content: A medical assessment was conducted soon after the fall that was treated in the emergency room. It included assessments of visual acuity, postural hypotension, balance, cognition, depression, and medication problems. The results were used to identify and address problems that could contribute to fall risk. Participants received referrals to relevant services, as appropriate, based on identified risk factors.

Evidence-based strategy

Evidence-based strategies are most likely to succeed in preventing falls. They have documented evidence regarding their proven ability to prevent falls, based on research evaluations of their outcomes. Evidence-based strategies must be implemented with fidelity to the original design.

The home assessment was conducted during a single visit. The OT identified environmental hazards in the home such as uneven outdoor surfaces, loose rugs, and unsuitable footwear.

Based on findings, the OT provided advice and education regarding safety within the home, made safety modifications to the home with the participant's consent, and provided minor safety equipment. The OT made social service referrals for participants who required hand rails, other technical aids, adaptive devices such as grab bars and raised toilet seats, and additional support services.

Key Elements: For medication review and modification, a medical specialist rather than a general practitioner is recommended.

The NoFalls Intervention

Intervention: This study looked at the effectiveness of group-based exercise in preventing falls when used alone or in combination with vision improvement and/or home hazard reduction. The intervention components focused on increasing strength

Fidelity

The actual strategy implementation matches how the strategy was intended to be implemented by: (1) the original developer of the strategy; and (2) the people who made any necessary adaptations to the local context.

and balance, improving poor vision, and reducing home hazards.

Outcome: The group-based exercise was the most potent single intervention; when used alone, it reduced the fall rate by 20 percent. Falls were reduced further when vision improvement or home hazard reduction was combined with exercise. The most effective combination was the group-based exercise with both vision improvement and home hazard reduction. Participants who received all three components were one-third less likely to fall.

Focus: Increase strength and balance, improve poor vision, and reduce home hazards.

Content: There were three components:

- Exercise: Weekly 1-hour classes plus daily home exercises. Classes were designed by a physical therapist to improve flexibility, leg strength, and balance.
- Vision improvement: Referral to an appropriate eye care provider if a participant's vision fell below predetermined criteria during the baseline assessments.
- Home hazard reduction: An assessment consisting of a walk-through using a checklist for those rooms used in a normal week, followed by a discussion of potential changes to the rooms.

Key Elements: Although the most effective single component was the NoFalls exercise program, the complete program should be followed because partial implementation may not reduce falls.

Stepping On

Intervention: A series of small group sessions to teach fall prevention strategies to community-dwelling older adults.

Outcome: The fall rate among participants was reduced about 30 percent compared with those who did not receive the intervention. The intervention was especially effective for men. The fall rate among male participants was reduced almost two-thirds.

Focus: Improve self-efficacy, empower participants to make better decisions and learn about fall prevention techniques, and make behavioral changes.

Content: The program addressed multiple fall risk factors: improving lower limb balance and strength, improving environmental and behavioral safety in both the home and community, and encouraging visual and medical screenings to check for low vision and possible medication problems. Seven sessions were conducted in easily accessible community settings with a follow-up home visit and a three-month booster session.

The program requires a physical therapist, an occupational therapist, a person trained in road safety for older drivers who can discuss pedestrian safety, a low vision expert, and a nurse or community pharmacist who can discuss medications. Other potentially useful content experts include a podiatrist or perhaps a nutritionist.

Key Elements: Using content experts is critical. It is also important to let each expert know what is expected of them, to provide feedback, and to make sure each focuses on fall prevention.

A Multifactorial Program

Intervention: A moderate-intensity intervention that used tailored strategies based on assessments of each participant's risk factors.

Outcome: After 1 year, participants were 10 percent less likely to fall and 5 percent less likely to have an injurious fall, compared with people who received usual medical care.

Focus: Reduce disability and/or falls by: improving physical fitness, modifying excessive alcohol use, improving home safety, reducing psychoactive medication use, and improving hearing and vision.

Content: The assessments consisted of simple screening tests for six risk factors. The intervention content varied based on the individual's risk factors. Risk factors that were assessed included: inadequate exercise, excessive alcohol use, home hazards, use of psychoactive drugs, impaired hearing, and impaired vision. The program was delivered by a single nurse educator who received brief training from the research team.

Key Elements: The nurse's follow-up phone contacts and home visits may have had positive effects on participants' health that were independent of the interventions for specific risk factors.

Yale FICSIT

Intervention: Frailty and Injuries: Cooperative Studies of Intervention Techniques (FICSIT) was a tailored combination of intervention strategies based on an assessment of each participant's fall risk factors. Participants were about 30 percent less likely to fall compared with people who did not receive the intervention.

Focus: Identify and modify each participant's risk factors.

Content: This program provided an individualized intervention for each participant. The content varied based on the fall risk factors identified. Possible intervention components included medication adjustment, recommendations for behavioral change, education and training, home-based physical therapy, and a home-based progressive balance and strengthening exercise program. The selection of interventions was guided by decision rules and priorities. A nurse practitioner and physical therapist conducted the risk factor assessments.

Key Elements: The assessments need to be clearly linked to the intervention components. The minimum risk factor interventions include:

- postural blood pressure and behavioral recommendations
- medication review and reduction (especially psychoactive medications)
- balance, strength, and gait assessments and interventions
- environmental assessment and modification.

It is essential that the progressive balance and strength exercise program includes both supervised and at-home (unsupervised) components.

The SAFE Health Behavior and Exercise Intervention

Intervention: A program of four group classes on how to prevent falls. The classes addressed environmental, behavioral, and physical risk factors and included exercise with instructions and supervised practice. The home safety portion included a home inspection with guidance and assistance in reducing fall hazards.

Outcome: Overall, participants were 15 percent less likely to fall compared with those who did not receive the intervention. Male participants showed the greatest benefit.

Focus: Reduce risky behaviors, improve physical fitness through exercise, and reduce fall hazards in the home.

Content: The SAFE health behavior intervention consisted of four one-hour group classes that used a comprehensive approach to reducing fall risks. Classes address environmental, behavioral, and physical risk factors. Each class session also had an exercise component that included a brief demonstration of fall prevention exercises and about 20 minutes of supervised practice.

During the home safety inspection, the assessor inspected the participant's home and identified fall hazards using a standard protocol. The assessor encouraged the participant to remove or repair the hazards identified during this initial visit. The participant was given fact sheets on how to obtain technical and financial assistance for making repairs and modifications.

Key Elements: Not available.

Sources: Strategy information adapted from Centers for Disease Control and Prevention (CDC), "Preventing Falls: What Works: A CDC Compendium of Effective Community-based Interventions from Around the World." Boxed definitions adapted from various CDC prevention resources.

The Symposium's Consensus Conference Meeting Format

The Older Adult Fall Prevention Symposium employs a facilitated meeting process called a One-Day Consensus Conference designed by the Fulwider Partners consulting firm.

How it works

A One-Day Consensus Conference takes a diverse and sometimes large group of stakeholders with varying amounts of knowledge about and interest in a topic and puts them on a level playing field so they can reach consensus on some decision needing to be made. Typically, the objective is to draft a recommended action plan for using limited resources to solve a problem. The consensus built around the action plan helps conference sponsors secure internal and external funding to solve the problem at hand.

The process allows each participant a full and fair opportunity to influence the outcome, even when many people need to be consulted. Consensus conferences are designed to minimize or eliminate some negative things that can happen when diverse groups interact, such as domination of the discussion by one or two influential or high-ranking people. They can also be more efficient, stimulating and rewarding for participants than alternative processes such as brainstorming sessions and formal committee meetings.

To understand a One-Day Consensus Conference, it helps to examine each of its parts.

Briefing materials

Briefing materials are the foundation of a One-Day Consensus Conference. If organizers had to bring participants up to speed on the issue at hand through educational presentations on the day of the conference, there would be no way to accomplish so much in one day.

Organizers send participants briefing materials well in advance of the conference. Organizers carefully prepare the materials to present an objective summary of the matter to be discussed, including such things as the history of the problem, current statistics, and pro-and-con accounts of solutions tried in other times and places. Lack of knowledge is a key obstacle to people's full and fair participation in a discussion; the briefing materials help eliminate that obstacle.

Session 1: Draft questions

Participants are randomly assigned to small groups of 6-12 people, with whom they will meet twice during the conference. At the first meeting, small-group members have a broad discussion of the issue at hand, drawing heavily on the briefing materials. They ask each other questions about the briefing materials. Drawing on their own experiences and expertise, they offer additional information to the group that was not covered in the briefing materials. They determine what they still need to know in order to make a good decision, and work together to draft questions to ask a panel of experts. Small-group facilitators assist each group in its efforts.

Session 2: Q&A with expert panel

Participants meet in a large group for the Q&A. An invited panel of subject experts, chosen for their knowledge and their commitment to speak objectively, answers questions written by the small groups. The conference facilitator ensures the experts answer questions to everyone's satisfaction.

Session 3: Draft recommendations

Each small group drafts a limited number of recommendations for the action plan (e.g. this action should be taken; money should be spent this way). Groups submit their recommendations to the conference facilitator, who prepares and distributes paper handouts listing all the recommendations.

Session 4: Narrow down recommendations

The conference facilitator leads a Q&A session about the recommendations. The facilitator calls on groups to clarify their ideas in response to questions from other groups and suggests similar items that could be combined. As this happens, the facilitator re-types the recommendations on a laptop computer, displaying the work for all to see on a projector screen.

Session 5: Generate voting ballot

After a break, the discussion on narrowing down the recommendations continues. By the end of the discussion, the recommendations text the facilitator has been composing on screen is finalized. Shortly after the conference, the facilitator posts the final text online and sends participants an e-mail inviting them to vote. The vote is held open for only a short time to ensure the large group's discussion, and points of consensus that emerged during it, are fresh in each participant's mind.

Background on consensus conferences

The National Institutes of Health developed a "consensus development conference" in 1977 to "produce evidence-based consensus statements addressing controversial issues in medicine important to health care providers, patients, and the general public." Recent NIH conferences have dealt with producing "state of the science" reports on Cesarean delivery, chronic insomnia, menopause, and improving end-of-life care.

While the NIH is still using the process several times a year, consensus conferences have seen the greatest development in Europe. In the late 1980s the Danish Board of Technology adapted the process to involve lay citizens, aiming to help lawmakers understand the social context of emerging technologies and create an informed public debate about technology. The Danes have applied the model recently to teleworking, electronic surveillance, and road pricing. Elsewhere, the most popular consensus conference topic has been genetic modification of food.

The Danish consensus conference procedure employs eight days of discussion over a period of three months. The NIH's conferences typically take two and a half days. Compressing the consensus conference process into one day requires eliminating one key aspect: the writing of a recommendations report during the conference by the participants themselves. Instead, the conference facilitator writes a report based on the priorities selected in the large-group discussion, information gleaned from a debriefing session with the small-group facilitators, and a review of recordings taken during the small-group discussions. The conference facilitator e-mails the draft report to every participant and accepts comments by e-mail for a two-week period before preparing a final report and submitting it to the conference organizer.

Symposium Agenda

8:30 a.m.	**Registration**
	Participants randomly assigned to small discussion groups
9 a.m.	**Welcome**
9:05 a.m.	**Introduction to Symposium Sessions**
9:20 a.m.	**Session 1: Draft Questions**
	Small groups review briefing documents, draft questions for expert panel Q&A
10:30 a.m.	**Break**
10:40 a.m.	**Session 2: Q&A with Expert Panel**
	Facilitator moderates to ensure small groups' questions answered fully
12 p.m.	**Working Lunch**
	Session 3: Draft Strategy Recommendations
	Small-group members discuss and write their recommendations
1:30 p.m.	**Break**
	Facilitator prepares a list of all the groups' recommendations
1:45 p.m.	**Session 4: Narrow Down Recommendations**
	Facilitator calls on groups to clarify their ideas in response to questions from other groups, suggests similar items that could be combined
3 p.m.	**Break**
3:10 p.m.	**Session 5: Generate Voting Ballot**
	Groups continue their discussion, with the goal of generating ballot language for use in online voting the next day
3:45 p.m.	**Conclusion**
	Participants are reminded to cast their online votes within 24 hours and to watch their e-mail for the opportunity to comment on the draft Symposium report

Session 1: Write Questions

Session description

Participants will work in small groups randomly assigned at registration. Each small group, meeting in separate areas, will discuss these briefing materials to identify additional information group members need to make an informed decision on recommending strategies for preventing older adult falls in Kansas.

Participants will do the following in their small groups:

- Have a broad discussion of the issue at hand, drawing heavily on the briefing materials.
- Ask each other questions about the briefing materials.
- Drawing on their own experiences and expertise, offer additional information to the group that was not covered in the briefing materials.
- Determine what they still need to know in order to make a good decision.
- Work together to write two questions to ask a panel of experts.

Session instructions

- Each group, please write two questions for the expert panel. We impose this limit because we have just 80 minutes and want to treat each group fairly.
- Please try to avoid multi-part questions.
- Write your questions on the provided Question Submission Form.
- Keep one copy for your group and give one copy to the conference facilitator.
- Appoint a representative to stand and ask your questions during Session 2: Q&A with Experts.

Why we're doing this

This is an additional step, beyond having individual participants read the briefing materials ahead of time, to ensure everyone is "on the same page" in terms of understanding background information about older adult falls, principles of effective prevention, and what needs to be accomplished at the Symposium.

How can I work ahead?

Write down some questions of your own you came up with as you read the briefing materials.

Session 2: Q&A with Expert Panel

Session description

All the small groups will gather together for this Q&A. An invited panel of subject experts, chosen for their knowledge and their commitment to speak objectively, will answer questions written by the small groups. The conference facilitator will ensure the experts answer questions to everyone's satisfaction, asking follow-up questions as necessary.

Session instructions

- We'll take the first question from each group, starting with Group 1.
- Group representatives, please stand and ask your questions, and be ready to clarify your questions if necessary.
- After the first round of questions, we'll take each group's second question, again starting with Group 1.

Why we're doing this

This is the final step in preparing everyone to make the best-informed choices from among the many options available for preventing older adult falls in Kansas.

During the Q&A

You can use this space to take notes.

Session 3: Draft Action Recommendations

Session description

Small-group members will sit together for a working lunch. Small groups will have an in-depth discussion of the actions necessary to prevent older adult falls in Kansas, then draft three recommendations for the action plan.

Please deliberate in your small groups about which fall-prevention strategies should be included in the Kansas Older Adult Fall Prevention Plan. Your small group should consider the **compatibility** of potential strategies with local Kansas **contexts,** especially the context of small communities which may have limited **capacity** for implementation. Your group will need to consider whether **adaptation** of these strategies is necessary and desirable, while keeping in mind that **evidence-based strategies** are ideally implemented with **fidelity** to the original design. For definitions of these terms, refer back to the Fall Prevention Programs section.

Session instructions

- Work together to generate three recommended strategies for the Prevention Plan
- When your group settles on the precise wording you want, fill out two copies of the Recommendation Submission Form.
- Take one copy of the Recommendation Submission Form to the facilitator, and keep one copy for your group.

Why we're doing this

We need the best ideas possible for using limited resources to prevent older adult falls in Kansas. Several small groups working separately can do more original thinking than would be possible in a large brainstorming session. Holding the initial discussion of recommendations in small groups also increases opportunities for each individual participant to have her or his input fully and fairly considered.

How can I work ahead?

Write down which of the fall prevention programs from the briefing materials appealed to you, and why.

Session 4: Narrow Down Recommendations

Session description

Participants will gather for the first part of a two-part large-group discussion on the action plan recommendations. Up for discussion will be a paper handout containing all the recommendations generated by each group.

The conference facilitator will lead a discussion about the recommendations, calling on groups to clarify their ideas in response to questions from other groups. The facilitator will ask participants to suggest similar items that could be combined, and seek everyone's consensus on such combinations.

As this happens, the facilitator will re-type the recommendations on a laptop computer, displaying the work for all to see on a projector screen.

Session instructions

- Be prepared to clarify your small group's recommendations.
- Offer suggestions for combining recommendations where appropriate.

Why we're doing this

In this session consensus should begin to emerge when each small group sees the other small groups are thinking along similar lines. A shared understanding of the most important older adult fall prevention priorities should develop as groups clarify their recommendation, and as similar items are combined. Combining similar recommendations, where appropriate, keeps the voting ballot manageable.

During the discussion

You can use this space to take notes.

Session 5: Generate Voting Ballot

Session description

This is the second part of the two-part discussion begun in Session 4. The discussion is in two parts simply to give participants a break to consider their work so far. The facilitator will briefly summarize the first part of the discussion, then resume where the group left off.

By the end of the discussion, the recommendations text the facilitator began composing on screen during Session 4 will be finalized. Shortly after the Symposium, the facilitator will post this final text online and send participants an e-mail inviting them to vote.

Session instructions

- Think about and suggest ways to conclude the discussion in a fashion likely to elicit consensus from everyone involved. At this point we will have just 35 minutes to finish our work.

During the discussion

You can use this space to take notes.